A2LA Assessor Environmental Method Checklist

Volatile Organics - GC/MS

Item	Section 1 - Personnel	Reference	Yes-No or NA	
1.1	Does the analyst(s) interviewed meet the job description position requirements, training and qualifications for performing the test? Supervisor:_____ Technician:_____	(G25)6.1		

Item	Section 2 - Equipment & Facilities	Reference	Yes-No or NA	
2.1	Does the purge and trap system contain a purging device(s), trap and desorber?	(ORDO)524.2,6.2 (1989)		
2.2	Is the purging device equipped to accept 5 and 25 mL samples with a water column depth of at least 5 cm?	(ORDO)524.2,6.2.1 (1989)		
2.3	Is a split/splitless injection port present for performing syringe injections of 4-bromofluorobenzene (BFB)?	(ORDO)524.2,6.3.1 (1989)		
2.4	Is a subambient oven controller present for cooling the column oven below 10°C?	(ORDO)524.2,6.3.1 (1989)		
2.5	Is the system equipped with variable constant differential flow controllers so column flow rate remains constant throughout the desorption and temperature program?	(ORDO)524.2,6.3.1 (1989)		
2.6	Is the mass spectrometer capable of scanning 35 to 260 amu with a complete scan cycle time (including scan overhead) of 2 sec or less?	(ORDO)524.2,6.3 (R3,1989)		
2.7	Is the scan cycle time calculated as the total MS data acquisition time in seconds divided by the number of scans in the entire chromatograph?	(ORDO)524.2,6.3.4 (1989)		
2.8	Are the volatile organic analysis laboratory and sample storage area(s) free of solvent contamination?	(SW846)5030A,3.4 (7/92)		

Item	Section 3 - Method	Reference	Yes-No or NA	

3.1	Is the MS tune performed at the beginning and every 8 hours using 25 ng BFB to demonstrate acceptable relative abundance criteria?	(ORDO)524.2,9.3 (1989)		
3.2	Is the MS tune performed at the beginning and every 12 hours using 50 ng BFB to demonstrate acceptable relative abundance criteria?	(SW846)8240B,7.3.1 (9/94)		
3.3	Is the gaseous headspace between the water and the trap less than 15 mL total volume?	(SW846)8240B,4.11 (9/94)		
3.4	Is a heated purge system used for low level soil samples heated to 40°C?	(SW846)8240B,7.4.3 (9/94)		
3.5	Is the purge gas flow rate adjusted to 40 mL/min with a purge time of 11 minutes?	(ORDO)524.2,11.1 (1989)		
3.6	Is the purge gas flow rate as specified in the method?	(SW846)5030A,Tble1 (7/92)		
3.7	Is the purge gas passed through the water column as finely divided bubbles with the bubble size <3 mm at the origin ?	(ORDO)524.2,6.2.1 (1989)		
3.8	Are the sample and standards analyzed under the identical instrument conditions?	(ORDO)524.2,10.6 (1989)		
3.9	Is the sample brought to room temperature before filling the syringe?	(ORDO)524.2,11.1.2 (1989)		
3.10	Are medium/high level soil samples analyzed by extracting 4 grams sample in 10 mL methanol and adding 100 µl to 5 mL water and then analyzing as a water sample?	(SW846)5030A, 7.3(7/92)		
3.11	Is the trap conditioned for 10 min at 180°C with backflushing prior to each day of use?	(ORDO)524.2,6.2.2 (1989)		
3.12	Is the desorber capable of heating the trap rapidly to 180°C and is the trap not heated higher than 200°C?	(ORDO)524.2,6.2.4 (1989)		
3.13	Is poor bromoform sensitivity used to characterize trap failure?	(ORDO)524.2,6.2.4 (1989)		
3.14	Is a minimum of three standards used to calibrate a range of a factor of 20 in concentration?	(ORDO)524.2,7.8.1 (1989)		
3.15	Are standards prepared in methanol using gravimetric techniques and corrected for weight if the purity of the compound is certified less than 96%?	(ORDO)524.2,7.3.3 (1989)		
3.16	Are methanol standard solutions, prepared from liquid analytes, stored at 4°C for no more than four weeks unless verified by quality control samples?	(ORDO)524.2,7.3.4 (1989)		
3.17	Are methanol standard solutions, prepared from gaseous analytes, stored at less than 0°C for no more than 1 week or stored at room temperature for no more than 1 day?	(ORDO)524.2,7.3.4 (1989)		
3.18	Are internal standards added to all standards, samples and blanks?	(ORDO)524.2,7.5 (1989)		
3.19	Are surrogates added to the samples and laboratory reagent blanks?	(ORDO)524.2,7.5 (1989)		

3.20	Is the standard with the medium concentration run first?	(ORDO)524.2,9.2.4 (1989)		
3.21	Is the appropriate extraction or purge method referenced with the test method?	(SW846)8000A,7.1 (7/92)		
3.22	Are five standards containing each analyte prepared that bracket the range of concentrations found in the samples with the lowest standard being near and above the method detection limit?	(SW846)8000A,7.4.2 (7/92)		
3.23	Are five standards bracketing the concentration range containing each analyte and internal standards used to calculate the response factor for each compound?	(SW846)8000A,7.4.3 (7/92)		
3.24	Are at least three standards containing each analyte prepared that bracket the range of concentrations?	(CFR136)601,7.4 (6/86)		
3.25	Is the average response factor used when the RSD is less than 20% for the calibration range of standards when using the internal standard calibration method?	(SW846)8000A,7.4.3 (7/92)		
3.26	Is the retention time window defined by injecting single compound standards over a 72 hour period and calculating the window as ± 3 times the standard deviation of the retention time for each standard?	(SW846)8000A,7.5.2 (7/92)		
3.27	Is system maintenance performed when less than 99% of the compounds in the calibration solution are not recognized by the GC/MS peak identification software?	(ORDO)524.2,9.2.4 (1989)		
3.28	Is a blank carried through all stages of the sample preparation & measurement steps?	(SW846)8000A,8.2 (7/92)		
Item	**Section 4 - Sample Handling Practices**	**Reference**	**Yes-No or NA**	
4.1	Are all samples collected in duplicate?	(ORDO)524.2,8.1.1 (1989)		
4.2	Is the second sample preserved with 1:1 HCl to pH < 2?	(ORDO)524.2,8.1.1 (1989)		
4.3	Are duplicate field reagent blanks (trip blanks) collected with the samples?	(ORDO)524.2,8.3.1 (1989)		
4.4	Is the sample bottle checked for trapped air and checked for leaking prior to analysis?	(ORDO)524.2,8.1 (1989)		
4.5	Are samples stored at 4°C and analyzed within 14 days of collection?	(ORDO)524.2,8.2 (1989)		
4.6	Are samples preserved with either ascorbic acid or sodium thiosulfate when residual chlorine is present?	(ORDO)524.2,8.1.1 (1989)		

Item	**Section 5 - Quality Control Practices**	**Reference**	**Yes-No or NA**	

5.1	Is the laboratory reagent blank analyzed with each work shift to determine background system contamination?	(ORDO)524.2,10.5 (1989)		
5.2	Is the laboratory precision and accuracy demonstrated by analyzing five to seven replicates of each analyte in the concentration range of 0.2 to 5 µg/L?	(ORDO)524.2,10.3 (1989)		
5.3	Is the laboratory precision and accuracy demonstrated by analyzing four aliquots of each analyte at the method specified level?	(SW846)8000A,8.6 (7/92)		
5.4	Are four replicate quality control samples at 10µg/L in methanol analyzed to determine the laboratory precision and accuracy?	(CFR136)601,8.2 (6/86)		
5.5	Are replicate laboratory fortified blanks analyzed quarterly and added to the control chart data to check precision?	(ORDO)524.2,10.8 (1989)		
5.6	Is a laboratory fortified blank analyzed every 20 samples and found to be within ±20% of the true values with an RSD of less than 20%?	(ORDO)524.2,10.6 (1989)		
5.7	Are the method detection limits below the drinking water regulatory reporting limits?	(ORDO)524.2,10.3.3 (1989)		
5.8	Is a quality control standard from an external source evaluated for accuracy at least quarterly?	(ORDO)524.2,10.9 (1989)		
5.9	Is a spike or quality control sample analyzed a minimum of 10% of all samples when measuring wastewater?	(CFR136)601,8.3 (6/86)		
5.10	Are the surrogate recoveries for samples, blanks and spikes within the method specified limits?	(SW846)8240B,8.9 (9/94)		
5.11	Is the calibration and QC acceptance criteria within the method specified limits and the laboratory's own method criteria?	(SW846)8240B,8.1 (9/94)		
5.12	Are the integrated areas of the quantitation ions of the internal standards and surrogates in the continuing calibration checks and blanks checked to ensure the drift is less than 50% in any area measured during initial calibration to indicate a loss of sensitivity?	(ORDO)524.2,10.4 (1989)		